

What is claimed is:

1. A surveying instrument comprising:
 - a sighting telescope through which a sighting object can be sighted; and
 - an AF drive unit which is provided separately from said sighting telescope,wherein said AF drive unit can be mounted to and dismounted from a body of said surveying instrument;
 - said AF drive unit including:
 - a sensor which receives part of a light bundle which is passed through an objective lens of said sighting telescope;
 - a drive mechanism which drives a focusing lens group of said sighting telescope along an optical axis thereof;
 - a controller which inputs sensor data output from said sensor to control the operation of said drive mechanism in accordance with said input sensor data so as to focus said sighting telescope on said sighting object; and
 - a driving force transmitting device which transmits a driving force generated by said drive mechanism to said focusing lens group in a state where said AF drive unit is mounted to said body of said surveying instrument.
2. The surveying instrument according to claim 1, further comprising a light guide, provided between said AF drive unit and said body of said surveying instrument, for guiding said part of said light bundle which is passed through said objective lens to

said sensor.

3. The surveying instrument according to claim 2, wherein said light guide comprises a first aperture formed on said body of said surveying instrument and a second aperture formed on a body of said AF drive unit, said first aperture and said second aperture being aligned so that said part of said light bundle can travel from inside of said body of said surveying instrument to said sensor via said first and second apertures.

4. The surveying instrument according to claim 1, wherein said AF drive unit comprises a focus control portion which is manually operated to control said operation of said drive mechanism.

5. The surveying instrument according to claim 4, wherein said focus control portion comprises an AF start button, said controller performing an autofocus operation upon said AF start button being depressed.

6. The surveying instrument according to claim 4, wherein said focus control portion is positioned in the vicinity of an eyepiece of said sighting telescope.

7. The surveying instrument according to claim 1, wherein at least one of said drive mechanism and said AF controller is supplied with power from a battery accommodated in said AF drive unit.

8. The surveying instrument according to claim 1, wherein said body of said surveying instrument comprises a manual focus system with which said focusing lens group can be manually moved to adjust a focal point of said sighting telescope.

9. The surveying instrument according to claim 1, wherein said body of said surveying instrument comprises a motorized manual focus system with which said focusing lens group can be manually moved by operating at least one hand-operated member to adjust a focal point of said sighting telescope.

10. The surveying instrument according to claim 1, wherein said body of said surveying instrument comprises said sighting telescope.

11. The surveying instrument according to claim 1, wherein said surveying instrument is a total station.

12. The surveying instrument according to claim 1, wherein said driving force transmitting device comprises:

a first gear provided in said AF drive unit, said first gear partly projecting out of said AF drive unit; and

a second gear provided in said body of said sighting telescope;

wherein said first gear and said second gear mesh with each other in a state where said AF drive unit is mounted to said body of said surveying instrument.

13. The surveying instrument according to claim 12, wherein said second gear partly projects out of said body of said surveying instrument.

14. The surveying instrument according to claim 2, wherein said body of said surveying instrument comprises said sighting telescope;

wherein said sighting telescope comprises an erecting optical system positioned

behind said focusing lens group; and

wherein said light guide comprises a beam splitting optical member attached to a surface of said beam splitting optical member.

15. The surveying instrument according to claim 14, wherein said erecting optical system comprises a Porro-prism.